

STATUS OF THE PIPING PLOVER IN MASSACHUSETTS
1995 SUMMARY

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Observers reported a total of 441 breeding pairs of Piping Plovers (Charadrius melodus) at 79 sites in Massachusetts in 1995 (Table 1). Breeding pairs are defined as pairs observed with either a nest or unfledged chicks or that exhibit site tenacity and evidence of pair bonding and territoriality. Overall observer effort in 1995, measured as number of sites surveyed and intensity of census effort at each site, was roughly comparable to previous efforts conducted annually since 1986. At least 9 pairs that established territories or nested unsuccessfully were believed to have moved to new sites and renested or at least established new territories between late May and early July. These pairs were included in counts of pairs at both sites where they occurred, but were tallied only once in regional and state totals for numbers of pairs and numbers of pairs for which fledging data were reported (Table 1).

The 1995 total of 441 pairs is the highest count of Piping Plovers recorded in Massachusetts since comprehensive statewide surveys began in 1985, and represents an increase of 89 pairs (25%) over the 1994 count of 352 pairs (Table 2). Number of pairs increased in 8 of 9 regions of the state (Table 3). The Lower Cape from Chatham to Provincetown continued to support the greatest abundance of birds with 165 pairs, 37% of the Massachusetts population.

In addition to estimating total pairs present during the breeding season, cooperators also censused pairs at all occupied sites and 35 historic or potential sites during this year's standardized "index count" period between 27 May and 4 June. The intent of the index count is to minimize double-counting of pairs that move between sites, thereby providing an index to population trends that is more precise than the total count. The 1995 index count was 413 pairs, 94% of the total count of 441 pairs and a 26% increase over the 1994 index count of 329 pairs.

Maximum numbers of pairs occurred at Crane Beach (28), Sandy Neck (25), South Beach-Chatham (30), and Parker River National Wildlife Refuge (21). Fourteen sites had ≥ 10 pairs and accounted for 52% of all pairs.

Overall mean productivity for Massachusetts in 1995 was 1.62 chicks fledged per pair, based on data from 426 of 441 pairs (97%) at 76 of 79 sites (96%) (Table 2). This is the lowest productivity since 1990 (Table 2) and represents a 10% decline from the statewide average of 1.80 chicks fledged per pair in 1994. Five regions of the state averaged < 1.5 chicks fledged/pair (Table 3). A chick was considered fledged if it survived ≥ 25 days or was observed in flight, whichever occurred

first.

Cooperators reported data on reproductive success for 555 nest attempts by 425 pairs. Nest success was 0.61 (337 of 555 nests hatched at least 1 egg). Hatching success was 0.57 (1,152 of 2,021 eggs hatched) and fledging success was 0.60 (688 of 1,150 chicks survived to fledge). The fate of 2 chicks was undetermined.

Abandonment was the most common cause of nest loss identified, followed by overwash or flooding from high tides and heavy rains, and predation by foxes (Table 4). Of particular concern was an apparent "smart" fox that depredated 10 nests inside exclosures at Nauset Spit in Orleans. In all instances, fox tracks approached the exclosure, a hole had been ripped through the netting on top, fox tracks were inside the exclosure, all eggs were gone with no shell fragments left, and a hole was dug under the exclosure.

Ten percent of nests in exclosures were abandoned (37 of 353 nests) compared to 6% of nests without exclosures (12 of 202). Cooperators reported that causes of abandonment could not be determined for 32 of 49 (65%) abandoned nests (Table 5). At 6 exclosures, predation on one of the adults was determined to be the cause of nest abandonment, and evidence suggested that abandonment at 7 other enclosed nests was caused by disturbance from predators or competitors.

Wire predator exclosures were used to protect 353 of 555 nests (64%) (Table 6). Nest success (percentage of nests hatching ≥ 1 egg) was 77% for nests within exclosures compared to 44% for nests without exclosures. Similarly, 71% of eggs protected with exclosures hatched compared to only 42% of unprotected eggs (Table 7).

We extend our sincere thanks to all the biologists, beach managers, landowners, and concerned individuals that participated in conservation efforts for Piping Plovers and other coastal birds in Massachusetts in 1995.

Table 1. Abundance, distribution, and productivity of Piping Plovers in Massachusetts, 1995.

Location	Number of pairs				No. pairs for which fledge data reported	Source ^d
	Index count ^a	Total count ^b	No. chicks fledged ^c			
NORTH SHORE						
Salisbury Beach, Salisbury	1	1 ^e	0	1 ^e		RD
Plum Island-North End, Newburyport/Newbury	2	2 ^c	0	2 ^c		GN, RS
Parker River NWR, Newbury/Rowley	21	21 ^c	44	21 ^c		GN, RS
Sandy Point St. Res., Ipswich	1	3 ^c	9	3 ^c		GN, RS
Crane Beach, Ipswich	21	28 ^c	62	28 ^c		DR
Coffin's Beach, Gloucester	nd ^f	nd	nd			-
Wingaersheek Beach, Gloucester	0	nd	nd			DR
Good Harbor Beach, Gloucester	0	nd	nd			DR
SOUTH SHORE						
Third cliff, Scituate	0	0	-	-		MC
Fourth cliff, Scituate	0	0	-	-		MC
Duxbury Beach, Duxbury/Plymouth	7	7	14	7		MC
Plymouth Beach, Plymouth	5	5	9	5		JC, MZ, SPa
Ellisville State Park, Plymouth	2	2	1	2		HW
Scusset Beach, Sagamore	3	3	8	3		HW
UPPER CAPE						
Black Beach/Sippewisset, W. Falmouth	0	0	-	-		SH, LG
Woodneck Beach, W. Falmouth	0	0	-	-		SH, LG
Washburn Island, Falmouth	3	3	8	3		HB, BH, SN, BL
South Cape Beach, Mashpee	3	4	8	3		JCa, KB, LG
Popponesset Spit, Mashpee	3	3	6	3		KB, LG
Town Neck Beach, Sandwich	1	1	3	1		HW
Springhill Beach, Sandwich	3	3	6	3		HW

Table 1. Continued.

Location	Number of pairs		No. chicks fledged	No. pairs for which fledge data reported	Source
	Index count	Total count			
52 East Sandwich Beach, Sandwich	0	0	-	-	ES
53 Scorton Creek, Sandwich	5	6	5	6	ES
54 Sandy Neck, Barnstable	20	25	49	25	ES
55 Sampson's Is.-Dead Neck, Barnstable	4	4	8	4	DS, SS, LG
56 Dowse's Beach, Osterville	nd	0	-	-	SF, LG, HB
57 Long Beach, Centerville	2	2	2	2	SF, LG
58 Squaw Island, Hyannisport	4	4	2	4	LG, SH
59 Kalmus Park Beach, Hyannis	1	1	1	1	LG
60 Gray's Beach, Yarmouth	4	5	6	5	LG
61 Seagull Beach/Radio City, Yarmouth	2	2	4	2	LG, SH
62 Great Island, Yarmouth	3	4	13	4	LG
63 West Dennis Beach, Dennis	0	0	-	-	LG
64 Chapin Beach, Dennis	2	2	4	2	LG
65 Town Landings, Dennis	nd	nd	nd	-	-
66 Corporation Beach, Dennis	nd	nd	nd	-	-
67 Sesuit Beach, Dennis	nd	nd	nd	-	-
68 Quivett Neck Beach, Dennis	0	0	-	-	HB
69 Wings Island, Brewster	nd	nd	nd	-	-
70 Robbins Hill Beach, Brewster	nd	nd	nd	-	-
71 Town Beach, Brewster	nd	nd	nd	-	-
72 Ellis Launching Beach, Brewster	nd	nd	nd	-	-
LOWER CAPE					
73 Forest Beach, Chatham	0	nd	nd	-	JR
74 Cockle Cove, Chatham	0	nd	nd	-	JR
75 Harding Beach, Chatham	1	1	3	1	JR, WL
76 Harding Beach Point, Chatham	0	0	-	-	JR, WL
77 North Monomoy Island, Chatham	0	0	-	-	SW
78 South Monomoy Island, Chatham	11	14	13	14	SW
79 South Beach, Chatham	25	30	37	30	JR, WL

Table 1. continued.

Location	Number of pairs			No. chicks fledged	No. pairs for which fledge data reported	Source
	Index count	Total count				
80 Tern Island, Chatham	1	1	1	1	1	SF
81 Nauset Beach, Chatham	5	5	5	2	5	MG
82 Nauset Beach, Orleans	9	11	11	14	11	MG
83 Nauset Spit (Heights), Orleans	12	12	12	17	12	MG
84 New Island, Orleans	0	0	0	-	-	SH
85 Skaket Beach, Orleans	nd	nd	nd	nd	-	-
86 Rock Harbor Beach, Orleans	nd	nd	nd	nd	-	-
87 Plover Island, Orleans/Eastham	8	9	9	6	9	NG, SH
88 First Encounter Beach, Eastham	nd	nd	nd	nd	-	-
89 Coast Guard Beach, Eastham	9	9	9	7	9	KJ
90 Marconi Beach, Wellfleet	10	10	10	27	10	KJ
91 Jeremy Point/Great Island, Wellfleet	11	11	11	20	11	KJ
92 Pamet Harbor, Truro	0	0	0	-	-	SF
93 Beach Point, Truro	0	0	0	-	-	SF
94 Corn Hill Beach, Truro	0	0	0	-	-	SF
95 Pond Village Beach, Truro	0	0	0	-	-	SF, SM
96 Pilgrim Beach, Truro	0	0	0	-	-	SF
97 Ballston Beach/Newcomb Hollow, Truro	2	2	2	4	2	EH
98 Longnook Beach, Truro	1	1	1	0	1	EH
99 High Head/Head of the Meadow, Truro	8	8	8	24	8	EH
100 Race Point-South Beach, Provincetown/Truro	16	17	16	24	17	EH
101 Race Point-North Beach, Provincetown	15	16	15	25	16	EH
102 Long Point/Wood End, Provincetown	9	9	9	16	9	EH
Buzzards Bay	0	0	0	-	-	ES
103 Stony Point Dike, Wareham	0	0	0	-	-	-
104 Long Beach Point, Wareham	nd	nd	nd	nd	-	-

Table 1. Continued.

Location	Number of pairs		No. chicks fledged	No. pairs for which fledge data reported	Source
	Index count	Total count			
105 Little Harbor Beach, Wareham	nd	nd	nd	-	-
06 West Island, Fairhaven	2	2	5	2	JHi, BR, AT, EM
06 Winsegansett Heights, Fairhaven	0	0	-	-	JHi
07 Round Hill Beach, Dartmouth	0	0	-	-	JHi, BR, AT
09 Salter's Pond, Dartmouth	1	1	0	1	JHi, BR, AT, EM
09 Demarest-Lloyd State Park, Dartmouth	1	1	2	1	JHi, BR, AT, EM
11 Little Beach/Barney's Joy, Dartmouth	14	14	30	14	JHi, BR, AT, EM
11 Gooseberry Neck, Westport	1	1	0	1	JHi, BR, AT, EM
13 Horseneck Beach, Westport	11	11	18	11	JHi, BR, AT, EM
13 Acoaxet, Westport	0	0	-	-	JHi, BR, AT, EM
15 Cockeast Pond, Westport	1	1	2	1	JHi, BR, AT, EM
15 Richmond Pond, Westport	1	2	0	2	JHi, BR, AT, EM
17 Bay Point, Swansea	0	0	-	-	AW
ELIZABETH ISLANDS					
17 Naushon Island	0	0	-	-	JHa
17 Pasque Island	5	5	nd	-	JHa
17 Nashawena Island	7	7	4	7	KSp
17 Cuttyhunk Island	4	4	nd	-	SM, BB, DP, MG, HW
MARTHA'S VINEYARD					
01 Harthaven, Oak Bluffs	2	2 ¹	2	2 ¹	DS, HD
02 Eel Pond/Little Beach, Edgartown	1	1	0	1	DS, RR
03 Sylvia State Beach, Edgartown	2	3 ¹	1	3 ¹	DS, RC, HD
04 Norton Point Beach, Edgartown	11	11	21	11	RC, HD, DS
05 Wasque, Chappaquiddick	0	0	-	-	KSp
06 Leland/East Beaches, Chappaquiddick	6	6	4	6	KSp
07 Arruda's Pt./The Jetties, Chappaquiddick	4	4	2	4	KSp

Table 1. Continued.

Location	Number of pairs		No.	No. pairs for	
	Index	Total	chicks	data reported	Source
	count	count	fledged	which fledged	
2729 Cape Pogue Elbow, Chappaquiddick	6	6	9	5	KSP
30 Edgartown Great Pond, Edgartown	4	4	6	4	DS, RR, LT
31 Tisbury Great Pond (Quansoo), Chilmark ^m	3	4	3	4	DS, RR, KSP, LT
32 Black Point Pond, Chilmark	5	5	8	5	DS, RR, LT
33 Chilmark Pond-East, Chilmark	1	1	2	1	DS
34 Chilmark Pond-West (Lucy Vincent Beach), Chilmark	1	1	3	1	DS, RC
35 Long Beach/Squibnocket Beach, Chilmark	2	2	4	2	DS, RR, LT
36 Moshaup's Trail Beach, Gay Head	1	1	3	1	DS, RR, LT
37 Dogfish Bar, Gay Head	6	6	3	6	DS, RR, LT
38 Lobsterville Beach, Gay Head	1	1	4	1	DS, RR, LT
2739 Tashmoor, Tisbury	2	2	8	2	DS, RR, LT
2740 Nomans Land	0	0	-	-	BB
NANTUCKET					
2741 Great Point	7	8	8	8	KSM
42 The Galls	3	3	0	3	KSM
43 Coskata West Beach ⁿ	0	0	-	-	KSM
44 Coskata-Inner Trail ⁿ	0	0	-	-	KSM
45 Coataue	0	0	-	-	KC
46 Coskata-East Beach ⁿ	0	1 ^o	0	1 ^o	KC
47 Coskata Inlet/The Haulover ⁿ	1 ^o	0	0	1 ^o	KC, KSM
48 Quidnet	0	0	-	-	SP, JF
49 Siasconset Beach	0	0	-	-	SP, JF
50 Low Beach	6	6	8	6	SP, JF
51 Tom Nevers Head	0	0	-	-	SP, JF
52 Surfside	0	0	-	-	SP, JF
2753 Hummock Pond	1	1	2	1	KC

Table 1. Continued.

Location	<u>Number of pairs</u>		No. chicks fledged	No. pairs for which fledge data reported	Source
	Index count	Total count			
Smith Point	3	3	2	3	TS
Eel Point	3	3	7	3	KC
Tuckernuck Island	4 ^P	5	7	5	KSm, SM, HDi ML, SM
Muskeget Island	4	4	nd	nd	
TOTALS	<u>413</u>	<u>441</u>	<u>690</u>	<u>426</u>	

^a Index count = number of territorial pairs counted between 27 May and 4 June 1995, the standardized index count period for the Atlantic Coast population.

^b Total count = total number of territorial pairs present during all or a portion of the 1995 breeding season. Pairs that are suspected of nesting at more than 1 site are only tallied once in regional and state total counts and total numbers of pairs for which fledging data were reported.

^c Fledging is defined as chicks \geq 25 days of age or observed in flight, whichever occurs first.

^d Key to sources: AT = April Turner, AW = Anthony Waring, BB = Brad Blodget, BH = Beth Hesse, BL = Brian Long, BR = Brian Reid, CB = Chris Bergh, DP = Diane Pence, DR = David Rimmer, DS = Debra Swanson, DSc = David Scherf, EH = Ed Hoopes, EM = Erin McMichael, ES = Eric Strauss, GN = Glynnis Nakai, HB = Henry Barbour, HD = Helen DeGennaro, HDi = Hanni Dinkeloo, HW = Heidi Wennemer, JC = John Crane, JCa = Jean Cannizzaro, JF = Jennifer Funk, JHa = Jeremy Hatch, JHi = John Hill, JR = Jeff Romaneo, KB = Kimberly Bryan, KC = Karen Combs-Beattie, KJ = Kyle Jones, KSm = Karl Smith, KSp = Karen Spring, LG = Laura Gill, LT = Leah Tofte, MC = Michelle Carley, MG = Mark Genaris, MZ = Margo Zdravkovic, NG = Nat Goddard, RC = Robert Culbert, RD = Robert Deblinger, RR = Ruth Richards, RS = Robert Springfield, SF = Sean Flynn, SH = Scott Hecker, SM = Scott Melvin, SN = Sarah Nicholson, SP = Swede Plaut, SPa = Stephanie Parrot, SS = Susan Scherf, SW = Sharon Ware, TS = Tori Samuel, WL = Wendy Lillie-Hanson.

' Seven pairs that arrived at Crane Beach after the index count are assumed to have held territories earlier in the season on Plum Island or Salisbury Beach and so are tallied only once in total counts and numbers of pairs with fledge data for the North Shore and the state. The total number of pairs on all of Plum Island decreased from 26 to 20 between 5 and 18 June, and another pair was territorial during late May and early June at Salisbury Beach but no nest was found. The late-arriving pairs at Crane Beach included 2 pairs that established territories but did not nest.

' nd = no data available.

' Formerly South Beach Island, now reconnected to the mainland near Chatham Light.

' Plover Island was formerly the north end of Nauset Spit; it was created when Nauset Spit breached during winter 1993. During the 1995 nesting season, it was accessible by foot from Coast Guard Beach at low tide.

' One pair that nested unsuccessfully at Coast Guard Beach was believed to have renested at Plover Island. This pair is included in both site totals, but is tallied only once in index counts, total counts, and numbers of pairs with fledge data reported for both the Lower Cape and statewide.

' Includes Lecount Hollow.

' Race Point-South Beach includes all the Atlantic Ocean-facing beach of Cape Cod National Seashore from High Head north to the beginning of Race Point Beach proper. This includes locations referenced in previous years as Mission Bell, Frenchie's, Exit 9, and Armstrong Cut.

' One pair is believed to have relocated from Harthaven to Sylvia State Beach and is only tallied once in total counts and numbers of pairs with fledge data for Martha's Vineyard and statewide.

' Includes Long Point Wildlife Refuge and Lewis property.

' Coskata West Beach refers to the beach along the Nantucket Sound side of Coskata, from south end of The Galls south and west to the boundary of Coatee (was referenced as Coskata-North Beach by Tina Whitman in 1993, and included as part of The Galls by Marcia Litichfield in 1992 and 1991). Coskata-Inner Trail refers to the inland running south and west from Coskata toward Coatee. Coskata-East Beach refers to the beach along the eastern (Atlantic) side of Coskata, including the washover at The Glades. Coskata Inlet is the inlet from Nantucket Harbor into Coskata Pond.

° A pair was observed at the Haulover on 23 and 26 May and a single bird was observed there on 31 May and 6 June. We assume this is the same pair that later nested at the large washover near The Glades on Coskata-East Beach. This pair is only tallied once in numbers of pairs with fledge data for Nantucket and the state.

° SM and HDi observed 4 pairs on 22 May (2 with nests, 1 copulating, 1 courting), plus 3 individual birds feeding, 2 of which seemed to be together and may have been a 5th pair. KSm reported only 3 pairs on 5 June. Four pairs are tallied for the index count and represent a compromise between observations of KS, SM, and HDi.

Table 2. Summary of abundance and productivity of Piping Plovers in Massachusetts, 1986-1995.

Year	Total count ^a	Index count ^b	Mean chicks fledged/pair	No. (% of total) pairs with fledge data
1995	441	413	1.62	426 (97)
1994	352	329	1.80	334 (95)
1993	289	258	1.92	264 (91)
1992	213	207	2.03	206 (97)
1991	160	148	1.72	156 (98)
1990	140	111	1.38	125 (89)
1989	137	-	1.59	123 (90)
1988	134	-	1.29	114 (85)
1987	126	-	1.07	89 (71)
1986	139	-	-	-
1985	131	-	-	-

^a Total count = total number of territorial pairs present during all or a portion of the breeding season.

^b Index count = total territorial pairs counted during 9-day standardized count period in late May and early June.

Table 3. Summary of Piping Plover abundance (total pairs) and productivity (mean number of chicks fledged per pair) by region of Massachusetts, 1994 and 1995.

Region	Total pairs		Mean chicks fledged/pair	
	1994	1995	1994	1995
North Shore	39	48	1.92	2.35
South Shore	16	17	2.25	1.88
Upper Cape	54	69	1.61	1.84
Lower Cape	141	165	1.97	1.45
Buzzards Bay	27	33	1.30	1.73
Elizabeth Islands	16	16	1.33	0.57
Martha's Vineyard	35	59	1.77	1.43
Nantucket	17	25	1.41	1.08
Tuckernuck, Muskeget Is.	7	9	2.25	1.40
Total	352	441	1.80	1.62

Table 4. Causes of Piping Plover nest failures in Massachusetts, 1995.

Cause of nest failure	Number of nests		Total
	With exclosure	Without exclosure	
Abandonment	37	12	49
Overwash/flooding	19 ^a	24	43
Fox	17	17	34
Unknown predator	3	27	30
Crow	4	8	12
Skunk	2	9	11
Gull	0	3	3
Grackle	1	1	2
Dog	0	2	2
Eggs failed to hatch	3	0	3
Raccoon	0	1	1
Vandalism	1	0	1
Other	0	1 ^b	1
Unknown	8	18	26 ^c
Total	95	123	218

^a At one nest, 2 eggs were lost to high tide overwash, and 2 were lost to an unknown avian predator.

^b At this nest, the eggs and 1 adult were depredated by unknown predator(s).

^c Of 5 nests lost to unknown causes on Nashawena Island, several were suspected lost to coyote predation.

Table 5. Suspected causes of Piping Plover nest abandonments in Massachusetts, 1995.

Cause of nest abandonment	Number of nests		Total
	With exclosure	Without exclosure	
Adult depredated	6 ^a	0	6
Disturbance from predator or competitor	7 ^b	1 ^c	8
Human disturbance	1	0	1
Eggs inviable	1	1	2
Unknown	22 ^d	10 ^e	32
Total	37	12	49

^a Includes confirmed predation by fox (1) and suspected predation by dog (1), unidentified mammal (1), and unidentified bird (1).

^b Includes suspected disturbance caused by coyote (4), fox (2), and combination of fox and territorial killdeer (1).

^c Suspected disturbance caused by gulls feeding on crabs < 4 ft. from the nest.

^d Field reports speculated that abandonments might have been caused by storms with high winds and heavy rain (2) and crows perching on an exclosure (1).

^e Field reports speculated that abandonments might have been caused by an unidentified raptor near the nest (1) and harassment by Least Terns nesting all around the nest (1).

Table 6. Effects of predator exclosures on success of Piping Plover nests in Massachusetts, 1995.

Fate of nests	Number of nests (%)	
	With exclosure	Without exclosure
Successful	258 (77)	79 (44)
Unsuccessful	76 (23)	99 (56)
Total	334 (100)	178 (100)

^a Nests were considered successful if they hatched ≥ 1 egg.

^b Not included are 19 nests with exclosures and 24 nests without exclosures that were lost to tidal overwash or flooding from heavy rains.

Table 7. Effects of predator exclosures on hatching success of Piping Plover eggs in Massachusetts, 1995.

Fate of eggs	Number of eggs (%)	
	With exclosure	Without exclosure
Hatched	901 (71)	251 (42)
Depredated/ failed ^a	372 (29)	347 (58)
Total	1,273 (100)	598 (100)

^a Not included are 72 eggs from 19 nests with exclosures and 78 eggs from 24 nests without exclosures lost to high tide overwash or flooding from heavy rains.